munostaining for receptor. For those methods that are applicable to formaldehyde-paraffin sections, such studies can be performed retrospectively on materials stored as paraffin blocks. That immunostaining of tissue sections for estrogen receptor is rapid, relatively inexpensive, may be applicable to fixed-paraffin tissues and avoids the sampling problems inherent in cytosol assays is motivation enough to ensure that these studies of possible clinicopathologic correlations are pursued actively.

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Evaluation of Hypoglycemia

ASYMPTOMATIC HYPOGLYCEMIA has been observed frequently enough in control populations of women (17 percent) and men (25 percent) during a five-hour oral glucose tolerance test (OGTT) to be considered a variant of normality. Reactive hypoglycemia—that is, the symptoms of weakness, shakiness, sweating, tremor and tachycardia—may occur two to five hours after a glucose load as the plasma glucose falls below 50 mg per dl, especially in patients who have had gastrointestinal operations or have early diabetes mellitus. These symptoms are due to the adrenergic discharge triggered by the fall in plasma glucose and not the specific level or nadir observed. No clear-cut lower limit of normal plasma glucose values allows the diagnosis of hypoglycemia on the basis of OGTT results alone. These symptoms are often the result of other causes, such as anxiety, hyperthyroidism, pheochromocytoma or insulinoma.

If a patient's symptoms are to be attributed to hypoglycemia, it is important to determine whether they occur in the fasting state or after eating a meal, and not after a glucose load. OGTT is inappropriate for the diagnosis of fasting hypoglycemia, which is generally due to serious organic disease. To document fasting hypoglycemia, a 48- to 72-hour period of fasting should be supervised in the hospital or until hypoglycemia symptoms occur. At this time serum glucose, insulin and C-peptide levels should be determined. If the serum insulin is greater than 6 μU per ml when serum glucose is less than 40 mg per dl, then an insulinoma is most likely. The normal ratio of glucose to insulin should be greater than 3.6. Patients with insulinoma usually have a ratio of less than 2.5. If the serum C-peptide level is low, however, in relation to the serum insulin, then the patient may be taking insulin surreptitiously. If a patient's symptoms are occurring after meals, a meal tolerance test (a standard breakfast after fasting 10 to 16 hours) should be done. Blood samples are taken every half hour for five hours after the meal. If the lowest glucose value exceeds 60 mg per dl, the result is normal. If the value is less than 50 mg per dl, the tolerance test result is abnormal.

Some individuals may have symptoms during the tolerance test, yet the glucose values are normal. It is important to correlate the onset of clinical symptoms with the glucose values observed during the meal tolerance test. Thus it is possible some other factors such as glucagon or gastrointestinal disorders are altered and trigger the symptoms.

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Hair Analysis: A Potential Diagnostic Tool

HAIR CAN BE easily collected from a donor, stored without deterioration and analyzed with great sensitivity with recently developed technologies. Trace elements accumulate at concentrations at least ten times higher than those in blood or urine and may provide a continuous record of nutritional status, exposure to drugs or exposure to pollutants in the environment such as the heavy metals lead and mercury.

The elements and drugs found in hair are incorporated during synthesis of filaments in the follicle. Apparently the disulphide bonds in the cuticular protein of hair are sites for the deposition of metal during hair formation. These bonds are also interaction sites for exogenous metals from air, water, sweat or grooming materials. As the follicles are exposed to more substances

over time, the amount of substances incorporated in hair filament changes. Thus sequential analysis of filaments, from follicles to tip, provides a timed record of exposure. The intrinsic elements are of medical interest. The extrinsic elements resulting from environmental contaminations interfere with the interpretation of results if one is seeking the low values of nutritional studies, in contrast to the high values of toxicology.

The key to interpretation is the site of collection of the sample on the body and how it is cleaned or prepared before analysis. For example, 5-cm long maternal hair strands measured from the scalp correspond to a fetal growth period from two weeks before conception through 16 to 19 weeks of gestation. The concentration of metals detected in this hair indicates fetal exposure to those metals during the first 16 to 19 weeks of gestation. The results will be accurate providing the laboratory has standardized any one of 24 possible preanalysis methods for cleaning the hair to remove extrinsic metal contamination from intrinsic elements.

Analysis of human hair is an experimental technology that has clinical promise. Currently, valid tests are available to confirm heavy metal toxicity due to lead, mercury and arsenic exposure.

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The Role of *Chlamydia* in Sexually Transmitted Diseases

THE BROAD SPECTRUM of clinical infections due to *Chlamydia trachomatis* has become apparent only in recent years. In the United States it is estimated that approximately 3 million new cases of chlamydial infections occur each year so that it may be the most frequent sexually transmitted disease in this country.

C trachomatis was identified in 40 percent to 50 percent of men with nongonococcal urethritis. A presumptive diagnosis of chlamydial infection can be made in these patients by excluding gonorrhea with a Gram stain and culture. *C trachomatis* was also found to be a common cause of epididymitis in men under 35 years of age.

In women *Chlamydia* can be isolated from 80 percent to 90 percent of patients with hypertrophic cervical erosions or with endocervical mucopurulent discharge. In addition, *C trachomatis* was recovered in 30 percent to 40 percent of patients with pelvic inflammatory disease.

Recently *C trachomatis* has been found in 30 percent of infants admitted to the hospital with a diagnosis of interstitial pneumonia. Furthermore, neonatal inclusion conjunctivitis may be the most common eye disease of newborns in the United States. Infants probably acquire these infections during delivery, though the possibility of prenatal or postnatal infection has not been completely excluded.

Chlamydial diagnostic services are now available in several centers and therapy with a wide variety of antimicrobial drugs, including erythromycin, tetracycline or sulfonamides, is highly effective. An increased awareness by the medical community is required in order to effectively control this pathogen.

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HLA and Paternity Testing

UNTIL RECENTLY the results of blood group testing for the determination of paternity were admissible as legal evidence only for the exclusion of a putative father. Because of the extreme diversity and low frequency of occurrence of different human leukocyte antigens (HLA) in the population, it is now possible to calculate with a very high degree of certainty the likelihood of a nonexcluded male being the actual father. Fourteen states now accept the results of these studies as legal evidence of paternity. In reporting the effects of HLA testing in 1,000 cases in which paternity was not excluded by ABO blood group testing, Terasaki noted that in 25 percent of the cases paternity could be excluded by HLA testing. Of the remaining cases 67 percent had a probability of paternity of over 95 percent and 16 percent of the cases had a probability of paternity over 99 percent. In this regard the HLA system is so discriminating that it has been possible to relate the paternity of a dizygotic twin pair to two different fathers.

The genes that control the inheritance of HLA are located on the short arm of human chromosome 6. Because everyone possesses a maternally inherited and a paternally inherited sixth chromo-